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Performance Oriented Packaging Testing of Container Assembly, Propellant, Initiating, PL 2074400 for Packing Group II Solid Hazardous Materials

5. FUNDING NUMBERS

6. AUTHOR(S)

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13. ABSTRACT (Maximum 200 words)

Qualification tests were performed to determine whether the in-service Container Assembly, Propellant, Initiating, PL 2074400 could be utilized to contain properly dunnaged solid type hazardous materials weighing up to a gross weight of 4.5 kg (10 pounds). The tests were conducted in accordance with Performance Oriented Packaging (POP) requirements specified by the United Nations Recommendations on the Transportation of Dangerous Goods, ST/SG/AC.10/1 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178. The container has conformed to the POP performance requirements; i.e., the container successfully retained its contents throughout the specified tests.

14. SUBJECT TERMS

POP Test of Container Assembly, Propellant, Initiating, PL 2074400

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PERFORMANCE ORIENTED PACKAGING TESTING OF CONTAINER ASSEMBLY, PROPELLANT, INITIATING, PL 2074400 FOR PACKING GROUP II SOLID HAZARDOUS MATERIALS

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April 1992

FINAL

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Sponsoring Organization:
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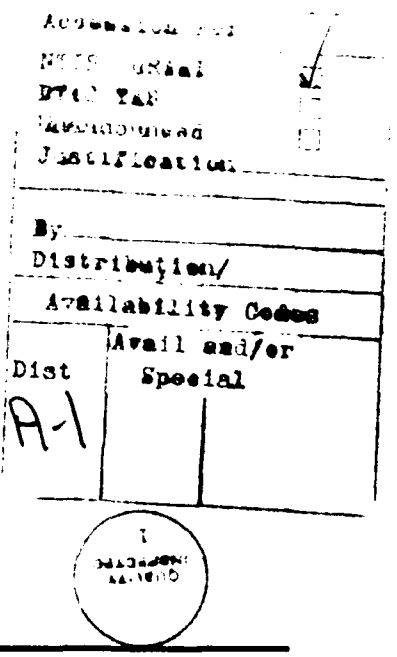
Mechanicsburg, PA 17055-5000



INTRODUCTION

This Performance Oriented Packaging (POP) test was performed to ascertain whether the Container Assembly, Propellant, Initiating, PL 2074400 (Packing Group II) meets the requirements specified by the United Nations Recommendation on the Transportation of Dangerous Goods Document, ST/SG/AC.10/1, Revision 6, Chapters 4 and 9 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178, dated 1 October 1991. The container's contents consisted of eight inner packagings filled with 2.1 kg (4.6 pounds) of sand and an additional .45 kg (1 pound) of sand. Gross weight of the loaded container was 4.5 kg (10 pounds).

Due to unavailability only one container was used for testing. This is less than the number required by the regulations. Approval for this deviation has been granted by the Under Secretary of Defense, Memorandum for the Joint Logistics Commanders dated 22 February 1990.

TESTS PERFORMED

1. Base Level Vibration Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.608. The container was placed on a repetitive shock platform which has a vertical linear motion of 1-inch double amplitude. Movement of the container was restricted during vibration in all but the vertical direction. The frequency of the platform was increased until the container left the platform 1/16 of an inch at some instant during each cycle. Test time was 1 hour.

2. Stacking Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.606. The container was subjected to a force applied to its top surface equivalent to the total weight of identical packages stacked to a minimum height of 3 meters (including the test container). A weight of 58.9 kg (130 pounds) was stacked on the test container. The test was performed for 24 hours. The weight was then removed and the container examined.

3. Drop Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.603. Six drops were performed from a height of 1.2 meters (4 feet) in the following orientations (three drops for each orientation):

a. Horizontally.

b. Diagonally on the edge between the cover assembly and the top ring of the container.

PASS/FAIL

1. Base Level Vibration Test

The criteria for passing the base level vibration test is outlined in Title 49 CFR, Sec. 178.608(c): No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength.

2. Stacking Test

The criteria for passing the stacking test is outlined in Title 49 CFR, Sec. 178.606(d): No test sample may show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation.

3. Drop Test

The criteria for passing the drop test is outlined in Title 49 CFR, Sec. 178.603(f): A package is considered to successfully pass the drop tests if for each sample tested, no rupture occurs which would permit spillage of loose explosive substances or articles from the outer packaging.

TEST RESULTS

1. Base Level Vibration Test

Satisfactory.

2. Stacking Test

Satisfactory.

3. Drop Test

Satisfactory.

DISCUSSION

1. Base Level Vibration Test

The input vibration frequency was 3.5 Hz. Immediately after the vibration test was completed, the container was removed from the platform, turned on its side and inspected. No unfavorable distortion or deterioration was observed.

2. Stacking Test

The container was inspected after the 24-hour period was over. No unfavorable distortion or deterioration was observed.

3. Drop Test

After each drop, the container was inspected. The simulated load was completely retained by the container.

REFERENCE MATERIAL

A. United Nation's "Recommendation on the Transportation of Dangerous Goods," ST/SG/AC.10/1, Revision 6.

B. Code of Federal Regulations, Title 49 CFR, Parts 107-178.

C. Bureau of Explosives Tariff No. BOE 6000K Hazardous Materials Regulations of the Department of Transportation by Air, Rail, Highway, Water including Specifications for Shipping Containers.

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TEST DATA SHEET

DATA SHEET:	
Container: Container Assembly, Propellant, Initiating, PL 2074400	
Type: 1A2	**Container P/N or NSN:** NSN 8110-01-288-8123
Specification Number: MS24347-38	**Material:** Metal
Gross Weight: 4.5 kg (10 pounds)	**Dimensions:** 9" H x 8-1/2" dia
Closure (Method/Type): Bolt and Nut	**Tare Weight:** 1.9 kg (4.4 pounds)
Additional Description: Additional .45 kg (1 pound) of sand was distributed among the inner packagings.	

PRODUCT:		
Name: See table		**NSN(s):** See table
United Nations Number: See table		
United Nations Packing Group: II		
Physical State (Solid, Liquid, or Gas): Solid		
Vapor Pressure (Liquids Only): N/A	**At 50 °C:** N/A	**At 55 °C:** N/A
Consistency/Viscosity: N/A		**Density/Specific Gravity:** N/A
Amount Per Container:		**Flash Point:** N/A
Net Weight: See table		

TEST PRODUCT:	
Name: 8 inner packagings filled with sand	**Physical State:** Solid
Consistency: N/A	**Density/Specific Gravity:** N/A
Test Pressure (Liquids Only): N/A	
Amount Per Container: N/A	**Net Weight:** 2.1 kg (4.6 pounds)

TABLE 1
Products Approved for Shipping in the
Container Assembly, Propellant, Initiating, PL 2074400

NALC	NSN	Product Type	Packing Drawing	Haz Class/Div	UN Number	Units/ Cntr	Unit Weight (lb)
WW98	1356-01-106-5985	Propellant, Initiating, U/W Chamber and Valve Assy, f/Torpedo, Mk 48-1, 3	2500877	1.3C	0161	8	.573

CONTAINER ASSEMBLY, PROPELLANT, INITIATING, PL 2074400

POP MARKING

UN 1A2/Y4.5/S/**/USA/DOD/NAD

** YEAR LAST PACKED OR MANUFACTURED

Encl (2)